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SUGGESTIONS FOR DEVELOPING AN ACRE OF COFFEE.

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Interest in the development of new coffee plantings is very general among coffee planters at the present time. This interest is fostered by several factors, the widespread need for new plantings, the availability to many planters of Federal funds for rehabilitation purposes, making new plantings not only possible but requisite, and the nurseries of coffee seedlings toward which the Red Cross has contributed funds.

It is thought that some suggestions may not be amiss as to how an acre of coffee may be developed which should prove superior to that already planted. The following suggestions are offered.

SEED

Seed to be taken from trees selected because of exceptional vigor and productiveness. To be planted not later than October. Planting at this time assures viability and, due to abundant moisture in the soil, quick germination.

NURSERY

The nursery to be located on good soil not previously in coffee (to avoid root-disease infection).

The soil should be given the same thorough preparation as for a garden.

The seed should be planted shallow, a depth of 1/4 inch being sufficient.

Spacing in the nursery may be 6 x 10 inches.

Artificial shade may be provided readily by banana, palm or fern leaves laid on a framework of poles. If the seedlings near the edge of the nursery, which receive more light than those nearer the center, outgrow the latter, a need for more light within is indicated.

Some nurseries will need no spraying; others cannot be kept in healthy condition without spraying. The nursery must be watched for insect and fungus enemies, and the suitable spray applied if the condition warrants.

1,400 seedlings to be grown. From these only the most vigorous plants to be selected for setting in the field. If the seedlings have grown well in the nursery and the shade in the field is adequate, the seedlings may be transplanted from nursery to field in the first rainy season, July to September. Otherwise, they should remain in the nursery until the same season of the following year.

LOCATION OF FIELD

If available, land not previously in coffee is to be preferred owing to the probable presence of root disease in old coffee land.

SHADE

Temporary

In some instances the forest growth already present may serve as temporary shade. Large trees should be either felled or cut back to such a height that further pruning may be done without danger to the coffee. If the field is insufficiently shaded or not shaded at all, bananas or quick-growing legumes such as the "gallito" (*Agati grandiflora*) should be planted. All trees and plants used to afford temporary shade should be removed as soon as warranted by the development of the permanent shade trees.

CHAPTER

Permanent

For permanent shade the guava (*Inga inga*), guama (*Inga laurina*), "machete" or dwarf bucare (*Erythrina Berteroana*), *Gliricidia sepium*, or other leguminous tree may be selected. A low shade is always desirable, since this can be regulated easily. It is to be obtained through the use of species which develop to only a small size, or through successive planting and removal of taller-growing species, interplanting with young trees when the trees of the earlier planting have reached half the development they will be allowed to make. One great objection to the guava (*Inga inga*) is the large size which it attains if allowed to develop fully. This may be obviated by its removal as soon as the trunk has attained a diameter of 7 or 8 inches.

The spacing of the shade trees should conform to that of the coffee so that each plant or tree used for shading will stand in the center of the rectangle formed by the four nearest coffee trees. If bananas are to serve as temporary shade, and Ingas as permanent shade trees, for coffee spaced 8 by 8 feet, the bananas should be set 16 x 16 feet, and an Inga should be set in the center of each square formed by four bananas. In the rows formed by alternating Ingas and bananas a coffee tree will stand midway between each Inga and banana. The bananas should be removed as soon as the Ingas furnish sufficient shade. As the shade becomes too dense the Ingas may be lopped, or alternate trees removed from alternate rows.

If the permanent shade is to consist of *Gliricidia* or *Erythrina*, in the center of every square formed by four coffee trees and not occupied by a banana as temporary shade, a cutting of *Gliricidia* or *Erythrina* should be placed. Alternate trees may be removed later as warranted.

SETTING COFFEE

Not more than 700 coffee trees to be planted per acre, spacing not closer than 8 x 8 or 7 x 9 feet, setting one tree per hole. Very fertile soil may justify a wider spacing.

Holes to be not less than a foot cubed and preferably greater. The poorer the soil, the greater the necessity for a large pit. The holes to be dug and left open for several months prior to setting the tree. Only surface soil ("la flor de la tierra") to be used in filling the holes. The planter can do at this time what he can never do again - supply the tree with a quantity of good soil in which to develop. The filling should be so that on the soil settling there will remain no depression, the tree to be set here standing ultimately at the same depth as prior to transplanting from the nursery.

On removal from the nursery the foliage to be reduced immediately 50% or more and the roots to be kept moist by transporting to the field in folds of damp sacking.

FERTILIZATION

The planter to use a high-grade fertilizer high in potash. The following is suggested: a mixture to be made by combining 1 part (by weight) of ammonium sulphate, 1 part superphosphate, and 2 parts potassium sulphate or potassium chloride. These ingredients may be mixed easily on a concrete floor with hoes and shovels much in the same manner as cement except without water. Mix thoroughly to insure even distribution of the different elements.

Apply as follows:

To nursery bed before planting coffee - 1 pound to every 25 square feet of surface, mixing the fertilizer well with the soil to a depth of 6 inches.
To each hole prior to setting coffee seedlings in field - 1 ounce, well mixed into the soil in the hole;

To each tree after setting -

1st year - 1st application	- November or December - 1 ounce,
" " - 2nd "	- May or June - 2 ounces,
2nd year - 3rd "	- November or December - 3 ounces,
" " - 4th "	- May or June - 5 ounces,
3rd year - 5th "	- November or December - 8 ounces,
" " - 6th "	- May or June - 8 ounces.

Subsequent applications larger in amount than the last noted above would result in greater production and would probably prove profitable.

For applications as outlined above, 24 pounds of fertilizer would be needed for the nursery; and on a basis of 700 trees to the acre, 175 pounds would be required at setting and for application during the first year; 350 lbs. the second year; and 700 pounds the third year. The materials for making this fertilizer mixture cost in San Juan in February, 1929, in ton lots \$43.00 to \$46.50 a ton, or less than 2-1/3 cents a pound.

In applying fertilizer distribute well wherever the roots are to be found. The better the distribution throughout the soil permeated by the roots, the quicker will the plant be able to take up the plant food. At the first application the fertilizer may be distributed from within an inch or so of the trunk to 6 or 8 inches from it, spreading it evenly over this area. As the tree grows larger and the amount of fertilizer increases, gradually increase the fertilized area until it extends from near the trunk to a distance of 3 feet or more from it. As a rough guide in the application of fertilizer to young trees the fertilizer may be spread over the area overhung by the branches and even a little beyond. After spreading, it should be mixed with the soil. For this operation a pronged hoe is useful.

